

## Student academic stress during the COVID-19 pandemic: a systematic literature review

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### ABSTRACT

This article presents systematic literature review related to student academic stress during the COVID-19 pandemic in the latest literature. Although there have been similar studies, there are still few that present the newest literature review related to student academic stress during the pandemic. This article uses the systematic review literature method to identify, evaluate, and interpret existing research results with the help of Publish or Perish version 7, VOSviewer, and NVIVO 12 plus applications. The release of articles in scopus indexed journals is limited to three years, namely 2020-2022. From the search results in the Publish or Perish version 7 application, there are 248 articles indexed by Scopus, then selected papers according to compatible themes into 50 pieces. The findings of the topics are stress, students, academic-related stress, academic performance, posttraumatic stress disorder, health psychology, academic achievement, emotional intelligence, depression, COVID-19, online exam, academic success, academic engagement, insomnia, and coping. These 50 articles were analyzed according to the topics set through the NVIVO 12 plus application and described the results according to research questions. This article contributes to subsequent research and studies the theme of student academic stress during the pandemic.

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## 1. INTRODUCTION

The COVID-19 pandemic turned face-to-face learning into online learning, which has an impact on the occurrence of academic stress in the world of education [1]–[2]–[3]. The study found that 577 students from 17 polish un experienced academic stress due to online learning. They experience stress, depression, and anxiety [4]. Students get a lot of assignments from lecturers during the pandemic, which results in academic stress that affects physical, emotional, behavioural, and mental health [5]. The COVID-19 pandemic also gave birth to mental health disorders, anxiety, depression, and excessive alcohol use [6].

Research on 113 undergraduate, master, and doctoral students in Indonesia showed that they experienced academic stress during the pandemic. They have conflicts with friends, and spouses, uncomfortable

boarding/home conditions, obstacles to consulting a supervisor, difficulty getting scientific references, difficulty paying tuition, and demands for scholarship returns. Doctoral students must experience academic stress compared to undergraduate and master's students [7]. If mapped, the causes of academic focus in this research on personal, educational, and financial issues. Students results in difficulties adjusting to life in the academic, social environment, and task demands [8]. Academic stress and social anxiety are recommended to seek healing through offline counseling, online counselling, and psychotherapy to reduce angry emotions and increase self-compassion when experiencing incompetence and failure [9]–[11]. Academic stress is the body's response to demands related to academic tasks that exceed students' adaptive abilities. Academic stress impacts adverse physical reactions, behaviours, thoughts, and emotions [5], [12], [13]. During a pandemic, the cause of academic stress is different from academic stress in general. Students' academic stress generally occurs due to academic assignments, confusion in determining learning goals, concerns of declining achievement, motivation, cognitive, physiology, and low effectiveness [12].

Much literature explores students' academic stress during the pandemic; long-term academic stress will cause various mental and physiological health disorders. Among the negative impacts are mental health disorders (anxiety, emotional fatigue, and depression), as well as physical disorders (decreased immune system, digestive disorders, and as well as insomnia). Depression becomes part of a severe health problem [14]. The pandemic that requires the implementation of online learning causes academic stress due to financial factors, the internet, the length of adaptation, the burden of parents in helping the execution of online learning, difficulty receiving materials, delays in sending tasks that have an impact on academic achievement [15]. Thus, the most straightforward interpretation to understand students' academic stress during the COVID-19 pandemic is to look at mental health and the impact of academic focus during the pandemic through the latest literature. To strengthen the relevant research arguments here, an initial analysis of thematic associations in the literature related to student academic stress during the COVID-19 pandemic is needed through this systematic literature review using VOSviewer software. The initial analysis of thematic associations results in Figure 1 shows that student academic stress has a very complex association pattern. Hence, the distribution of articles based on keywords is presented in Figure 2.

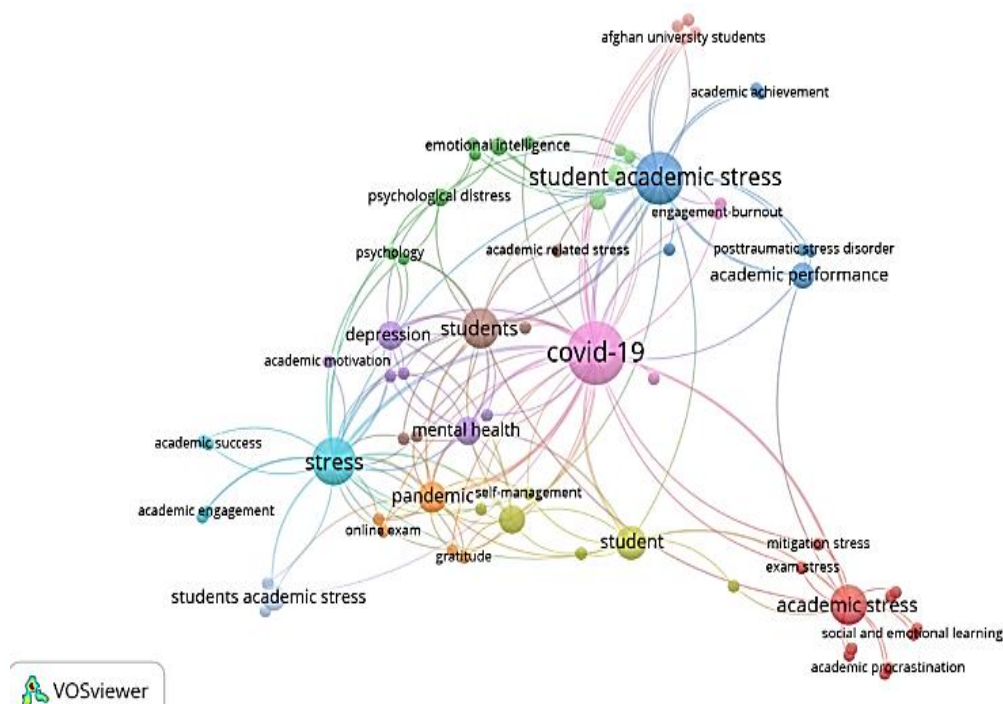


Figure 1. Initial network visualization

Figures 1 and 2 show discussions and studies related to student academic stress during the COVID-19 pandemic very closely with several other study themes such as stress, students, academic-related stress, academic performance, posttraumatic stress disorder, health psychology, academic achievement, emotional intelligence, depression, COVID-19, online exam, academic success, academic engagement, insomnia, coping, parenting style, gratitude, and others. The relevance between student academic stress and COVID-19 studies shows a direct link.

However, the mental health aspect is not closely related to the theme of academic stress study and COVID-19. Several studies have examined students' academic stress, but there are still few that read it with a systematic literature review [16]–[19]. This study explores students' academic stress with systematic literature review [20], [21]. Research on student academic stress with the latest systematic literature review that has been done is limited to coping strategies in students with a literature review [22], resilience in college students with a meta-analysis and metaregression study [23], music student workload with a systematic literature review study [24], the study of maladaptive coping of nursing students with an integrative review [25], the mental health of university students in Southeastern Asia with a systematic literature review [26], and impact of medical students' academic difficulties with scoping review [27]. This indicates that there is still a lack of studies on student academic stress with a systematic literature review.

Based on the above background, this research aims to explore student academic stress during the COVID-19 pandemic through current literature. The findings of this research can be used as a theoretical framework for educators in minimising student academic stress because it is still minimally done by other researchers, and the COVID-19 pandemic only occurred in early 2020. This study is driven by three research questions: i) what is the student academic stress during the COVID-19 pandemic? ii) what is the student's mental health? ii) what is the impact of academic stress on students?

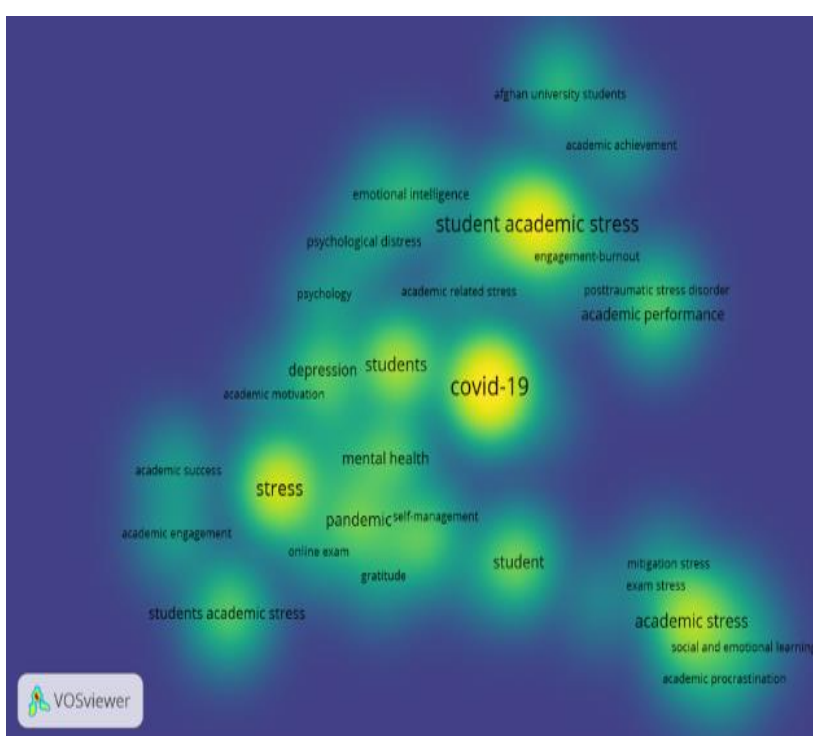


Figure 2. Visualization of article distribution based on keywords

## 2. RESEARCH METHOD

Systematic literature review is a method for identifying, evaluating and interpreting compatible research results related to research questions and specific topics or phenomena of concern [28]. In general, researchers searched for scientific articles relevant to the keywords “student academic stress during the COVID-19 pandemic, and student academic stress and academic stress in pandemic COVID-19” on the scopus database. The following steps are selected based on the relevant theme. After obtaining the article according to the theme, researchers conducted a descriptive data analysis according to the issues mapped through the NVIVO 12 plus software and continued with the withdrawal of conclusions. This stage of the study adopts the fink scheme presented in Figure 3 [29].

### 2.1. Data sources

This used scopus, a literature search database through Publish or Perish version 7, limited to three years, namely 2020-2022. In the search for articles using three keywords, the findings are “Student Academic Stress During the COVID-19 Pandemic,” there are ten articles, “student academic stress”, there are 132 articles, and

“academic stress in pandemic COVID-19,” there are 106 articles. The keyword is imperative because it has an abundant source of 248 pieces.

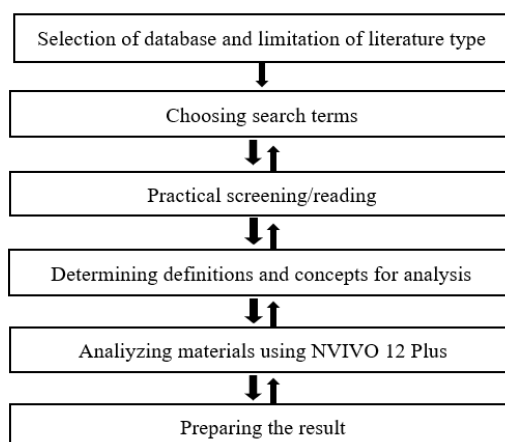


Figure 3. Literature review process [29]

## 2.2. Inclusion and exclusion criteria for selection of publications

The study limited the criteria in the database to determine whether all included articles were appropriate to answer the main research question, “How is student academic stress during the COVID-19 pandemic?”. The study implemented the following restrictions: i) published between March 1, 2020, and March 20, 2022. The selection of this date range is based on empirical research on student academic stress during the COVID-19 pandemic, which began to be widely carried out on March 1, 2020; ii) focus on student academic stress during the COVID-19 pandemic; iii) articles published in the indexed scientific journal scopus; iv) peer-reviewed, and v) research locations in the article come from developed and developing countries. Some of the reasons researchers apply the criteria limits are; first, although the concept of student academic stress during the COVID-19 pandemic is a new issue, articles containing discussions according to the keywords above were found abundantly in the scopus database. Second, the keyword selection student academic stress is found more in scopus than in other keywords. Third, student academic stress in the COVID-19 pandemic can be part of a multidisciplinary study that makes a theoretical contribution to subsequent research.

## 2.3. Screening and eligibility assessment for data analysis

In this study, the stages are carried out according to inclusion criteria. First, all articles according to the standards are selected. Second, abstracts and keywords in the report are chosen to ensure relevance according to research purposes. Third, every piece is read entirely and not just abstracts and keywords. Table 1 describes articles that meet the criteria and are categorised through several aspects: year of publication, journal name, author, and relevance to research questions. The study develops the theme aspects for the article once confirmed according to the mentioned criteria. The review process is continued by conducting a content analysis of key findings [30]. This step is to describe, in general students’ academic stress during the COVID-19 pandemic. In the next step, this study explores findings to answer research questions highlighting students’ academic focus during the COVID-19 pandemic.

## 3. RESULTS AND DISCUSSION

The description of the results here provides the findings of a synthesised evaluation of the 50 selected articles to answer the research question. Next, the researcher highlights previous theoretical frameworks or key constructs applied by previous researchers. Based on the initial analysis results, the researcher next mapped the articles directly or indirectly relevant to exploring student academic stress during the COVID-19 pandemic, namely student mental health and the impact of academic stress on students. Articles that did not fall into the three categories were excluded, resulting in 50 pieces selected from 248. The mapping results are presented in Table 1 from the journal aspect (name, edition, volume, and year), from revelation with the research questions (RQ): 3.1 student academic stress during the COVID-19 pandemic; 3.2 students mental health; 3.3 impact of academic stress on students.

Table 1. Mapping results of 50 articles based on links to research questions

Number	Journals	Relevance to the RQ
1	Advances in Medical Education and Practice 13 (2022)	RQ 3.2 [31]
2	Frontiers in Education 7 (Februari 2022)	RQ 3.1 [32]
3	International Journal of Environmental Research and Public Health (19) 2022	RQ 3.1 [33]
4	Psychology Research and Behavior Management 15 2022	RQ 3.1 [34]
5	Emerging Adulthood Vol. 10 (2) 2022	RQ 3.2 [35]
6	Journal of Family Issues 43 (2) 2022	RQ 3.1 [36]
7	PLoS ONE 16 (2) 2021	RQ 3.3 [37]
8	Asian Education and Development Studies 10 (2) 2021	RQ 3.3 [38]
9	Frontiers in Psychology 12 (March 2021)	RQ 3.3 [39]
10	The New Educational Review 2021	RQ 3.2 [40]
11	Journal of American College Health 2021	RQ 3.2 [41]
12	Journal of Social Work Education 2021	RQ 3.1 [41]
13	Education sciences (11) 802 2021	RQ 3.2 [42]
14	Frontiers in Psychology 2021	RQ 3.2 [43]
15	PLoS ONE 16 (6) 2021	RQ 3.2 [44]
16	Current Psychology (40) 2021	RQ 3.3 [45]
17	Biomedical Signal Processing and Control (68) 2021	RQ 3.1 [46]
18	International Journal Environmental Research Public Health (18) 2 2021	RQ 3.2 [47]
19	Psychological Reports 2021	RQ 3.1 and RQ 3.3 [48]
20	BMC Medical Education (21) 2021	RQ 3.2 [49]
21	Nurse Education in Practice (53) 2021	RQ 3.3 [50]
22	Journal of American College Health, 1–11, 2021	RQ 3.2 [51]
23	International Journal of Early Childhood Special Education (13) 2 2021	RQ 3.1 [52]
24	International Journal of Social Psychiatry 2021	RQ 3.2 [53]
25	Revista Chilena de Nutrición (48) 3 2021	RQ 3.1 [54]
26	Frontiers in Public Health 2021	RQ 3.3 [55]
27	Current Psychology 2021	RQ 3.1 [56]
28	Frontiers in Psychology 2021	RQ 3.1 [57]
29	PLoS ONE 16 (9) 2021	RQ 3.3 [58]
30	Journal Of International Dental & Medical Research (14) 2 2021	RQ 3.1 [59]
31	Journal Of Public Health Research (10) 1 2021	RQ 3.3 [60]
32	Scandinavian Journal of Educational Research 2021	RQ 3.2 [61]
33	Personality and Individual Differences (179) 2021	RQ 3.1 and RQ 3.3 [62]
34	Physiology & Behavior (234) 2021	RQ 3.2 [63]
35	Children and Youth Services Review (114) 2020	RQ 3.3 [64]
36	Psychiatry and Clinical Neurosciences 2020	RQ 3.3 [65]
37	PLoS ONE 15 (9) 2020	RQ 3.2 [66]
38	Academic Emergency Medicine: A Global Journal of Emergency Care 2020	RQ 3.2 [67]
39	Journal of Medical Internet Research 22 (9) 2020	RQ 3.2 and RQ 3.3 [68]
40	International Journal Environmental Research And Public Health 17 (17) 2020	RQ 3.3 [69]
41	PLoS ONE 15 (9) 2020	RQ 3.3 [70]
42	Academic Medicine (95) 8 2020	RQ 3.1 [71]
43	Psychiatry and clinical neurosciences (74) 602–631 2020	RQ 3.1 [72]
44	F1000 Research's 2020	RQ 3.1 [73]
45	Middle East Current Psychiatry (27) 2020	RQ 3.2 [74]
46	Heliyon (6) 2020	RQ 3.2 [75]
47	International Journal Environmental Research and Public Health 17 (20) 2020	RQ 3.3 [76]
48	Frontiers in psychology 2020	RQ 3.3 [77]
49	Frontiers in psychology 2020	RQ 3.1 [78]
50	International Journal of Wellbeing 10 (3) 2020	RQ 3.1 [79]

### 3.1. Student academic stress during the COVID-19 pandemic

Research in latin America mentions that students' academic stress during the pandemic stems from piling up tasks, family factors, boyfriend or girlfriend communication barriers, and the problem of declining financial income [36]. Academic stress is a psychic turmoil that impacts the emergence of mental and physical health problems. When students experience stress, physiological responses occur as an alarm reaction, such as an increased heart rate, the appearance of cold sweats, shaking, nausea, lung narrowing, and increased blood pressure. If this lasts long in students, the body will experience fatigue. Stressful conditions not appropriately handled will penetrate the realm of other psychic disorders, namely anxiety about academic tasks that are not completed. This anxiety condition will trigger other mental health disorders such as fear, anxiety, psychological distress, and confusion. Despite using artificial technology for online learning, engineering students at the University of Pamplona (Colombia) still find symptoms of academic stress due to online learning [54].

Academic stress causes are the demands of completing the course at the end of the study period and examinations. To suppress this stress, salivary biochemistry is needed to prevent the development of mental health disorders [33]. Students' academic stress occurs due to a lack of motivation to learn, lack of confidence in communication between friends, and lack of educational support which has an impact on their academic

performance [54], [61], [78]. Based on clinical observations, the pandemic resulted in student academic stress due to fear of virus transmission, personal and relational life limitations. The COVID-19 student stress questionnaire (CSSQ) on 514 students at several campuses in Italy found that academic stress disrupted relationships and academic climate with professors and friends, and caused theoretical study chaos [77]. A cross-sectional online survey from March-May 2020 found that academic stress data occurred due to fear and transmission of COVID-19. The positive impact of students diligently washing their hands and avoiding crowds [66].

Academic stress during a pandemic occurs in the learning process and student academic performance in the form of academic procrastination. The academic focus during the pandemic impacts increasing student assignment and dissertation procrastination [63]. Academic stress increased during the pandemic due to the lockdown. The pressure was highest for students majoring in Nursing as it was directly related to the COVID-19 pandemic due to the disruption of health training practices and nursing scientific order, decreased interaction with family, financial conditions and emotional increase, and online exam design [76]. The experience of academic stress during the study is comprehensively influenced by microsystems and interactive effects between campus and home [64]. Other findings suggest that academic stress occurs due to a mismatch between the expected learning system and the demands of academic achievement, including learning outcomes [56]. Academic focus, if not immediately addressed, has the potential to become chronic stress that increases hypothalamic-pituitary-adrenal (HPA) axial activity with changes in the neuroendocrine system, immune function, and cytokine profile; it has an impact on the decline of the immune system and other physical disease disorders such as internal organ infections, heart disorders, diabetes, and even cancer [44].

Academic stress is hazardous when students cannot manage it. The academic focus during the pandemic can happen to all students. But a study said the prevalence of academic stress is dominant in Health Science students. In general, students' academic focus is due to the shift of learning from manual to digital [42]. Stressors during the dominant pandemic resulted from lockdowns, uncertainty over the cessation of the COVID-19 virus, financial constraints, and online learning. Students must guarantee an internet connection because online lectures are more than 6-8 hours daily, plus many assignments and isolation [71] [36]. The COVID-19 International Student Wellbeing Study (C19 ISWS), through a sample of 2,480 students at InHolland Universities of Applied Sciences in the Netherlands, was found to experience stress, depression, and loss of resilience due to online learning [72]. Academic stress is caused by family pressure, class competition, courses, financial burdens, and scholarship requirements [38]. Research on 642 students (aged 18-25 years) in March-August 2020 found online learning had no impact on academic stress as long as there was an intervention and exceptional guidance from lecturers [39].

### 3.2. Student mental health

Lockdowns on many campuses in the world during the pandemic made students experience feelings of loneliness and aloofness. They resulted in severe psychological distress symptoms such as anxiety, eating disorders, depression, and others [37], [41], [42], [74], [75], [80]. The trend of students in the health department experiencing high mental health symptoms. In addition to the burden of practice, they experience mental and physical health, which affect high psychological distress and decreased academic performance [62]. Students at several campuses in Colombia experience mental health disorders, stress, depression, and anxiety due to technical constraints in online lectures [46]. Medical students in Malaysia and elsewhere in the study experienced mental health threats during the pandemic [49].

The limited space for students has led to an increase in mental health problems, including vulnerability to psychopathology, high anxiety in dealing with encouraging news and heightened concern about being exposed to the virus [35], decreased self-identity [60], and vulnerability of physical and mental health deterioration [58]. With China's highest population and COVID rate, mental health disorders are also very high, especially among university students. This is due to declining social support, unemployment, lack of access to healthcare, financial decline [65], [78], and the uncertainty of the pandemic's end [68], [73]. The impact of the pandemic on the decline in student mental health is due to economic pressure, fear of exposure to the virus [70], decreased attention from parents due to inhibition of interaction and communication [52], and decline in physiological health due to lack of quality sleep [47]. From a sample of 209 students, 68% female, 82% freshmen, 50% Asian, 32% Hispanic, 13% white, and 5% other from a public university in Southern California, USA, it was found that declining mental health included concentration difficulties, academic performance concerns and increased task load [32].

### 3.3. Impact of academic stress on students

Latin American students experience higher stress than their US counterparts due to differences in financial levels and health facilities, leading to higher anxiety and suicidal tendencies [36]. In Iraq, pandemic anxiety is higher among young students [74]. Delays in college graduation due to the pandemic impact anxiety, fear, failure of self-regulation, stress, poor intellectual functioning, and poor mental health [48]. Education in

universities was disrupted during the pandemic because students experienced pathological expressions ranging from anxiety, depression, stress, and feelings of sadness [42], [38]. The impact of student academic stress occurs due to increased academic procrastination [52], fear of virus transmission and up to academic tasks [37]; the pressure is also exacerbated by symptoms of depression and loneliness [40]. Based on research in the United States, academic stress is alleviated through real-time stress mitigation [67], online therapy, face-to-face clinical therapy, resilience, mediation, and stress mindset intervention [55], [58], [72]. In Sri Lanka and Jamaica, preventing academic stress required the role of psychologists and technology management with the Telehealth application. Students need to be invited to develop mental health programs using natural positive coping behaviour to overcome student academic problems [50], [68].

The academic stress of medical students is dominated by factors of high academic load, long courses, learning hassles, practicums, and exams. The empirical fact of this finding calls for high psychological pressure to impact burnout. The burnout intent here is depersonalisation, emotional exhaustion, and a low sense of personal accomplishment that affect mental health and psychological function. The prevalence of burnout in medical students during high medical training is about 43.3%, where 35-45% of medical students experience high emotional fatigue, 26-38% experience high depersonalisation, and 45-56% have suggestive symptoms [45], [49]. Academic stress impacts the quality of life of international students based on their academic standing and experience [57]. The level of academic stress in health science students (nursing, midwifery, and medicine) is higher than students in other fields of science. This is due to the many patient practice assignments that cannot be carried out. As for practice in the health sector, it is an essential point for mastering competencies in the health sector [31].

#### 4. CONCLUSION

The purpose and research questions in this systematic literature review study have been fulfilled. The results elaborated on the explanation that students' academic stress during the pandemic was accurate due to various factors, such as piled-up college assignments, emotional conditions, financial factors, family, internet connection, fear of contracting the COVID-19 virus, and lockdown. COVID-19 also confirmed the symptoms of student mental disorders such as health problems, physiological, depression, symptoms of distress, anxiety, and poor sleep quality that impact academic performance and performance. The impact of academic stress results in depression, burnout, poor mental health, and even suicidal tendencies. Furthermore, the findings in this article strengthen strategies to prevent student academic stress through online and offline therapy, resilience, mediation, mindset intervention, praying to god and maintaining control over the COVID-19 pandemic situation.

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